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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Volker Kuhnel

33495

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7590

09/21/2005

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EXAMINER

GRAHAM, ANDREW R

ART UNIT

PAPER NUMBER

2644

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/829,700

Applicant(s)

KUHNEL ET AL.

Examiner

Andrew Graham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 3, 4 and 13 is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☒ Claim(s) 5-12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 7/11/2005 have been fully considered but are moot in view of the further interpretation of the previously applied reference, as is discussed below.

Claim Rejections - 35 USC § 112

2. The applicant's amendments made to Claims 3-4 and 6-9 in view of the previous rejection(s) under 35 U.S.C. 112 of said claims suffice to overcome the basis of said rejection(s). Accordingly, said rejections are hereby withdrawn.

Specification

3. The disclosure is objected to because of the following informalities:

the terms "HVLO/HLLO", "HVLS/LOHL", and "HV/HL" appear numerous times throughout the application, including both the specification and claims. The original application was originally filed in German. Upon inspection of the originally filed document, it can be seen that the terms "HVLO", "HVLS", and "HV" were present in said document. On the second page ("2/2") of the certified translation filed 1/03/02, equalities or translations are disclosed, including "Norm-HVLS Funktion = standard, normal LOHL factor/function" and "Norm-HVLo-Funktion = standard, normal HLLO factor/function". Accordingly, "HVLS" appears to be the German translation or equivalent of the

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English term "LOHL" and "HVLO" appears to be the German translation or equivalent of the English term "HLLO". The "/" nature of the terms as they appear in the presently considered English application are thus interpreted to indicate that the two terms are different translations of the same term. However, without benefit of the certified translation or explanation otherwise, this manner of writing the term (e.g., "HVLO/HLLO") is suggestive of some form of division.

Accordingly, for the purposes of clarity, the applicant is respectfully requested to amend each of the terms the "HVLO/HLLO", "HVLS/LOHL", and "HV/HL" in the application to the terms "HLLO", "LOHL", and "HL", as is suggested proper by the certified translation document.

Objection to the specification is made herein because it lacks of section headings, as required by 37 CFR 1.77(c).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1 and 2** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishige et al (USPN 6094489). Hereafter, "Ishige et al" will simply be referred to as "Ishige".

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Ishige discloses a digital hearing aid with particular sound processing and compensation. The compensation by the system of Ishige is based on a predetermined input sound pressure, wherein the compensation is performed according to the user's hearing characteristic when the input sound pressure is above the predetermined pressure, but is performed according to a changed user's hearing characteristics when the input sound pressure is below the predetermined pressure (col. 10, lines 64-67; Figure 5-8).

Specifically regarding Claim 1, Ishige teaches:

A method for individualizing a hearing aid in adaptation to a loudness perception of an individual (col. 5, lines 10-15), said method comprising the steps of:

measuring and quantifying loudness perception parameters the individual (stored to memory in advance, col. 9, lines 60-64),

weighted by a positive first factor (loudness curve of user changed, col. 11, lines 23-26; factor can be derived for same sound pressure using equations (3) and (5), for example; positive nature of change can be seen in Figure 9, for example, for at least sound pressure levels > 1 , col. 12, line 25);

weighting of normal loudness perception parameters by a positive second factor (loudness curves of normal hearing person calculated and unchanged, which is a weighting of unity or (1); col. 11, lines 20-23);

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However, the compensation of the hearing aid in the system of Ishige is discussed in terms of an input sound pressure level (col. 10, lines 45-50).

Thus, Ishige does not clearly specify:

- combining the weighted loudness perception parameters of the individual with the weighted normal loudness perception parameters to define a weighted loudness parameter; and
- using the weighted loudness parameter for adjusting the hearing aid.

However, the values of loudness and sound pressure level are interrelated as evidenced by the formulas (such as 2,3, and 5) of Ishige as well as Figures 6 and 9. For sound pressure levels below c'' (which is equivalent to a loudness of $<c'$ - see Fig. 9), Ishige teaches that the gain is calculated using formula (5) ($Y_{is}=A_{is}*X_{is}-O_{is}$) (col. 12, lines 11-15). This gain G is determined by $G = b-a$ for a given input sound pressure (col. 10, lines 45-50). Thus for sound pressure levels below c'' , Ishige teaches that the gain is calculated using the formula (1) of $G = \text{formula (2)} - \text{formula (5)}$, or $G = (A_n*X_n - O_n) - (A_{is}*X_{is} - O_{is})$ for a given X or sound pressure level. However, as a loudness and sound pressure are related, these equations may also be solved in terms of a given loudness (Y). Solving formulas (2) and (5) for X , formula (2) equals $X_n=(Y_n+O_n)/A_n$ and formula (5) equals $X_{is}=(Y_{is}+O_{is})/A_{is}$. For a loudness correction $G(Y)$ analogous to formula (1), these equations result in loudness = $(Y_n+O_n)/A_n - (Y_{is}-O_{is})/A_{is}$. For a particular input loudness (Y), the determined

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loudness gain $G(Y) = Y \cdot (1/A_n - 1/A_{is}) + O_n/A_n - O_{is}/A_{is}$. The determination of such a loudness ($G(Y)$) reads on "combining the weighted loudness perception parameters of the individual with the weighted normal loudness perception parameters to define a weighted loudness parameter". The gain G determined by formula (1) of Ishige is utilized to adjust hearing aid parameters (col. 10, lines 45-50). Utilizing formula (1) as solved above for input sound at a particular loudness in a similar manner reads on "using the weighted loudness parameter for adjusting the hearing aid".

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to implement this alternate manner of determining compensation, solving formula (1) for a given input loudness, as part of the system of Ishige. The motivation behind such a modification would have been that such a manner of correction would have established a mathematically equivalent compensation function for adjusting the hearing aid, as is evidenced in the above discussion.

Regarding **Claim 2**, as detailed above, the gain of the system is based on the loudness functions of a normal person and a user (col. 10, lines 34-50). This reads on "wherein compression and/or amplification is/are adjusted in the hearing aid". Ishige also states that every frequency band of the input sound signal is analyzed, and that the gain for every frequency band is determined by the control section (23) and the gain is applied by the hearing sense compensation circuit (col. 10, lines 19-30). This determination of the gain per

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frequency band reads on "the amplification are each determined as a function of frequency".

Allowable Subject Matter

Claims 5-12, so far as claims 7-9 depend indirectly upon Claims 1 and 2, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 3-4 and 13 are allowed. Claims 7-9 would be allowable if rewritten to depend solely upon Claims 3-4 and 13.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Graham whose telephone number is 703-308-6729. The examiner can normally be reached on Monday-Friday, 8:30 AM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen can be reached on (703)305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Andrew Graham
Examiner
A.U. 2644

ag

September 19, 2005


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